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IS : 8712 (Part 6) - 1985

(Reaffirmed 2005)

Indian Standard

GUIDELINES FOR COORDINATION OF DIMENSION IN SHIPBUILDING

PART 6 COORDINATING SPACES FOR FURNITURE

Shipbuilding Sectional Committee MCPD 1, [Ref : Doc : MCPD 1 (533)]

1. Scope — Gives information on the dimensional requirements for furniture components in order to assist in the derivation of limited ranges of coordinating sizes for these items.

1.1 This standard includes information (Fig. 4 to 10) on the anthropometric and ergonomic dimensions which relate to the furniture items under consideration.

2. Definitions — For the purpose of this standard, the definitions given in IS : 8712 (Part 2)-1978 'Guidelines for coordination of dimensions in shipbuilding: Part 2 Glossary of terms' shall apply.

3. Guidelines for Selection of Coordinating Sizes

3.1 In order to achieve the coordination of dimensions it is necessary first to reduce the number of possible sizes that are to be used, that is, a selection of sizes must be made. The method given in IS : 8712 (Part 3)-1978 'Guidelines for coordination of dimensions in shipbuilding: Part 3 Coordinating sizes for components and assemblies' is to recommend the use of particular units of size or modules and multiples of these modules for the coordinating dimensions of components or assemblies.

3.2 Further variety reduction is obtained by standardizing the principal vertical and horizontal dimensions within the accommodation, such as deck-to-ceiling height or length and width of cabins. These dimensions are termed controlling dimensions and are covered in IS : 8712 (Part 4)-1977 'Guidelines for coordination of dimensions in shipbuilding: Part 4 Controlling dimensions'.

3.3 Within the restrictions imposed by the use of the standard modules and controlling dimensions it is necessary to select a range of the sizes for modular components which most conveniently meet the requirements found from the survey for the particular item. The selection may be made in accordance with IS : 6772-1972 'Recommendations for dimensional coordination for industrialized buildings — preferred increments'.

Note — Minimum sizes mentioned in Merchant Shipping (Crew Accommodation) Rules, 1960 as amended from time to time, applicable for different ship sizes should be noted while selecting the coordinating sizes according to this Indian Standard.

4. Coordinating Spaces for Furniture

4.1 The space allocated to an individual component (including an allowance for joints and tolerances for manufacture and siting) is termed a coordinating space and the dimensions of this space are termed coordinating dimensions. The coordinating dimensions defining the spaces are for length, width, depth and height and the ranges of sizes allocate to these dimensions are determined within the restrictions outlined in 3. Further reference to joints and tolerances is made in **6.1**.

4.2 Coordinating sizes for individual components are given in Table 1. The ranges of coordinating sizes are derived from the data given by statutory requirements and recommendations and have been choosen to provide mean coverage of the ranges of sizes most frequently encountered in the survey of existing furniture standards and ship outfits. All possible combinations of length, width, depth and height given in the table may be used.

4.3 The coordinating dimensions defining the spaces, particularly the height of a working top, must have regard to ergonomic and anthropometric considerations; the heights may require variation to accord with the particular function of the component or type of person to whom this is related. Figure 4 gives anthropometric data for guidance in design, Fig. 5, 6 and 7 gives examples of dimensions based on such data, and Fig. 8, 9 and 10 illustrate some other factors to be considered.

4.4 Within certain component coordinating spaces, allowance must be made for toe space, and it is recommended that for those components requiring provision of toe space (for example beds with drawers under) this should be 100 mm in height and 50 mm in depth.

5. Component Ranges

5.1 Within the ranges of coordinating sizes given in Table 1, particular sizes can be indentified as being of greater significance in terms of dimensional coordination because of frequency of use, economic production or flexibility of assembly.

5.2 Table 1 also indicates the coordinating sizes which are intended as the restricted series for each component to cover the majority of the existing range of furniture dimensions and should form the nucleus of any range proposed for manufacture. All combinations of length, width, depth and height may be used.

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5.3 Reference has been made in **3.3** to mathematical techniques that can assist in achieving flexibility for components but it is also often possible to increase the flexibility of a limited range of components by the use of 'infill' pieces or by 'makeup' jointing techniques, and it is recommended that attention be paid to these methods when component sizes are considered (*see* Fig. 1).

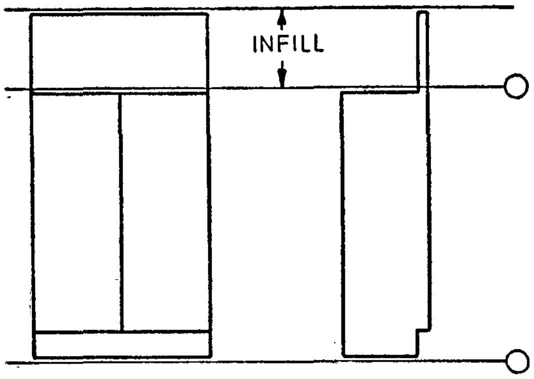


FIG. 1 USE OF INFILL PIECES

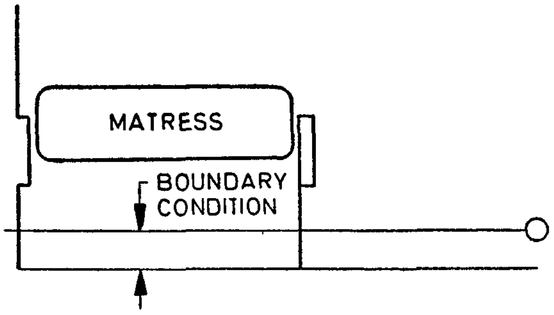


FIG. 2 BOUNDARY CONDITION

5.4 In selecting a range of sizes for a component it should be noted that the sizes given in Table 1 are the coordinating sizes. In some instances a situation may rise in which a built-in unit is placed on, or attached to, unfinished elements of the structure, and hence extends past the key reference place which defines the finished surface of the floor, bulkhead, ceiling, etc. The size of the component must therefore include this extra size in addition to the coordinating size (*see* Fig. 2).

5.5 This situation, which may involve either an addition to or a subtraction from the coordinating size, is termed a boundary condition and where possible is identified in the tables of coordinating spaces and component ranges.

Note — An example of a boundary condition is where built-in units are fitted to the deck before the flooring is laid.

6. Manufacturing Sizes

6.1 Coordinating sizes include allowances for the joints between components and for the deviations involved in component manufacture, setting out and assembly. In order to ensure that all manufacrurers produce compatible sizes capable of being assembled with standardized joint designs it is necessary to use an agreed procedure for determining work sizes and joint clearances. (*see* Fig. 3).

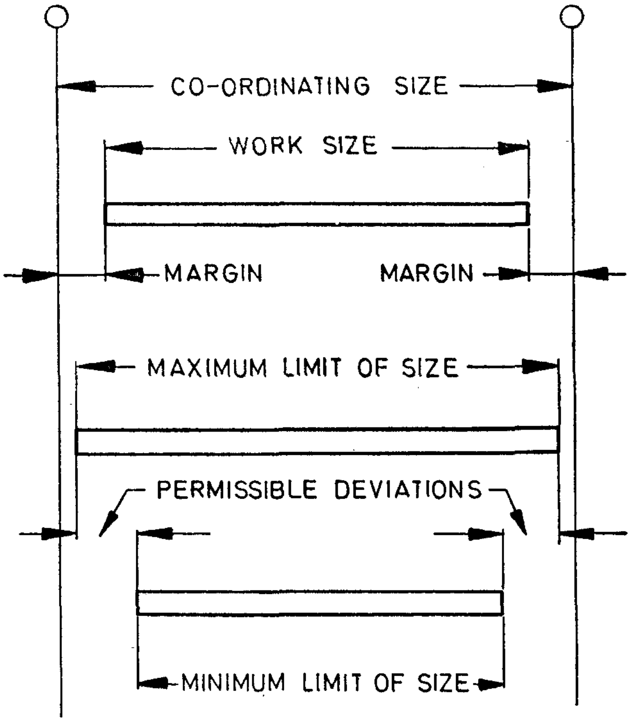


FIG. 3 DETERMINATION OF WORK SIZES

TABLE 1 COORDINATING SIZES FOR FURNITURE

(*Clauses* 4.2, 5.1 and 5.2)

All dimensions in millmetres.

The following conventions are used to indicate the degree of coordination intended for the furniture component dimensions:

n × 50	Any multiple of 50 mm, where *n* is any natural number including unity.
n × 100	Any multiple of 100 mm
600	Sizes given in the tables indicate the proposed range of sizes for a particular dimension
$\underline{600}$	Sizes that are underlined indicate the preferred sizes

Note 1 — A l combinations of length, width, depth and height may be used.

Note 2 — Boundary conditions may apply where camber and sheer is present and may also be dependent upon the form of construction at deck or deckhead.

Component	Length	Width	Depth	Height	Remarks
Bar counter	*n* × 100	400 500 600 700 800		900 950 1 000 1 050 1 100 1 150	See Fig. 6 and 8. For preparation of the counter see work benches and worktop. See Note 2.
Beds and bunks	1 900 1 950 $\underline{2\,000}$ 2 050	*n* × 50 750 $\underline{900}$ $\underline{1\,000}$ 1 400			Related to standard mattresses
Bed ends		$\underline{900}$ $\underline{1\,000}$ $\underline{1\,400}$		*n* × 50 $\underline{750}$ 1 000	Sizes related to Standard beds See Note 2
Bedside lockers		300 400 500 600	300 400 500	*n* × 50 $\underline{600}$ $\underline{750}$	See Note 2
Bedside table/Shelf			200	*n* × 50	Height refers to upper surface when fixed in position
		300 400 500	300 400	600 750	
Benches (Preparation and work benches)	*n* × 100	500 600 700 800 900		700 750 800 850 $\underline{900}$ 950 1 000	700 and 750 heights are intended for working from a seat See Fig. 7 See Note 2
Bookcases (closed)		*n* × 100 1 000 1 200	250 300 350	*n* × 50 $\underline{750}$ 1 000	
Bookracks (wall-mounted)		500 600	200 250	*n* × 50 200	Position of mounting related to eye level and height of reach
		700 800	300	500	
Bookshelves (open)		*n* × 100 600	200	*n* × 50 Up to 2 000	
			250 300	$\underline{750}$ $\underline{1\,000}$	

(*Continued*)

TABLE 1 COORDINATING SIZES FOR FURNITURE — *Contd*

Component	Length	Width	Depth	Height	Remarks
Bridge consoles					See consoles
Chart tables	*n* × 100 1 200 2 400	900 1 000 1 100 1 200		950 1 000 1 050	To store charts of 1050 720 normal size See Note 2
Chests of		*n* × 100 600 800 1 000	*n* × 50 500 600 700	750 1 000	See Note 2
Consoles (navigation)	*n* × 100	900 1 000 1 100 1 200		*n* × 50 from 950 Up to 2 100	See Note 2
Cupboards (low level)		*n* × 100 500 600 800 1 000 1 500 1 800	*n* × 50 500 600	*n* × 50 750 1 000	See Note 2
Cupboards (high level)		*n* × 100 500 600 800 1 000 1 200	*n* × 100 400 500 600	*n* × 50 1 900 2 000	See Note 2
Dartboard cupboard		700	150	900	Mounted at regulation height, 1 727 to centre
Desks and writing		*n* × 100 500 700 1 000 1 200 1 500	*n* × 50 450 500 600 700	750	See Fig. 10 See Note 2
Dressing tables		*n* × 100 1200	500 600	750	See Note 2
Drinks cabinet		*n* × 100 800	500 600	750 1 000	May relate to refrigerator cupboard. See Note 2
Examination couch	1 900	700		600 700	
Filing cabinet	450	450	650	800 1 400	
Flag locker		*n* × 100 1 000 1 500	350 400 450	*n* × 50 900 1 050	Divided into ducets 120 × 120 and 120 × 240 See Note 2
Hinged seats		400 500 600	400 450 500		Mounted for use at 400/450 height
Key board		*n* × 100 400 500 600		*n* × 100 600	Mounted position related to eye level

(*Continued*)

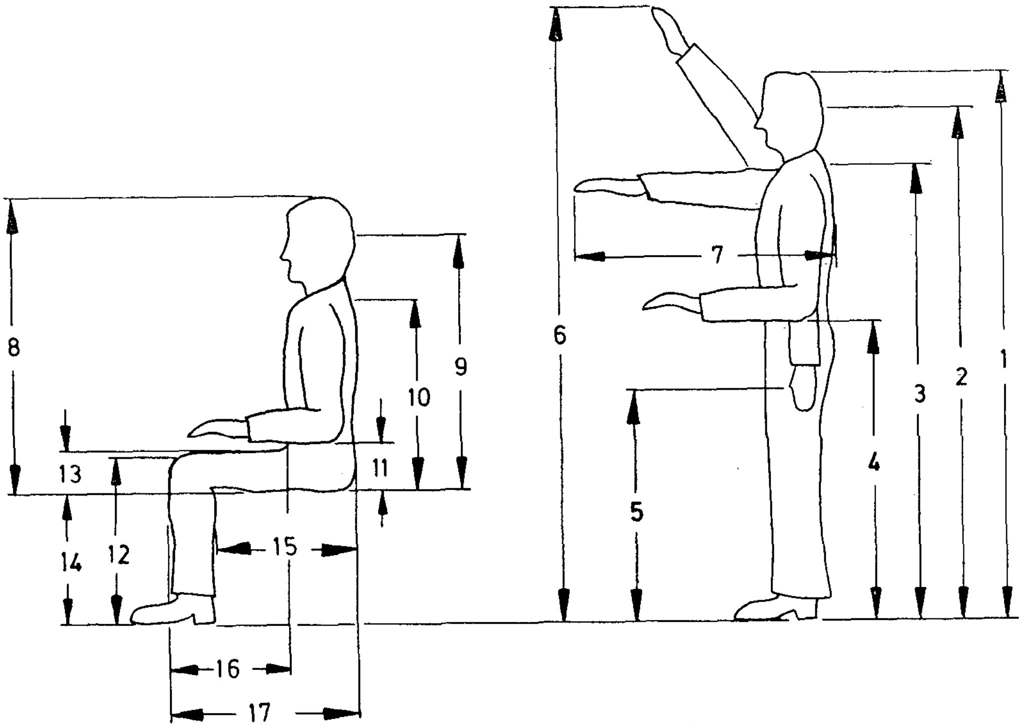
TABLE 1 COORDINATING SIZES FOR FURNITURE — *Contd*

Component	Length	Width	Depth	Height	Remarks
Key cabinet		*n* × 100 400 500 600	50 100	*n* × 100 600	Mounted position related to eye level
Lockers (free standing)		*n* × 50 300 400 550 750 900	*n* × 50 300 400 450 500 550 600	*n* × 50 1 850	
Lounge table (rectangular)	*n* × 100 800 1 000 1 200	*n* × 100 400 500 600 700		650 700 750	
Lounge table	800 900 1 000 1 200 diameter			650 700 750	
Lounge table (Games)	750	750		750	
Luggage rack (low level)		*n* × 100 800 900	*n* × 50 450 500 550	*n* × 50	Mounted position 400/450 height
Mattresses	1 850 1 900 1 950 2 000	*n* × 50 700 800 900 1 000 1 350			
Mess counters (serving and dining)	*n* × 100	*n* × 100 400 500 600 700 800		*n* × 50 900 950 1 000 1 050 1 100	See Fig. 6 and 8 See Note 2
Mess tables (rectangular)	*n* × 100 700 800 1 200 1 400 1 500 1 800 2 000 2 100 2 400 2 600 3 000	*n* × 100 700 800 900		750	See Fig. 9
Mess tables (circular)	800 900 1 000 1 200 1 350 1 500 1 700 1 900 diameter			750	See Fig. 9
Refrigerator cupboard		*n* × 100 600	*n* × 100 600	*n* × 50 1 000	See Note 2

(*Continued*)

TABLE 1 COORDINATING SIZES FOR FURNITURE — *Contd*

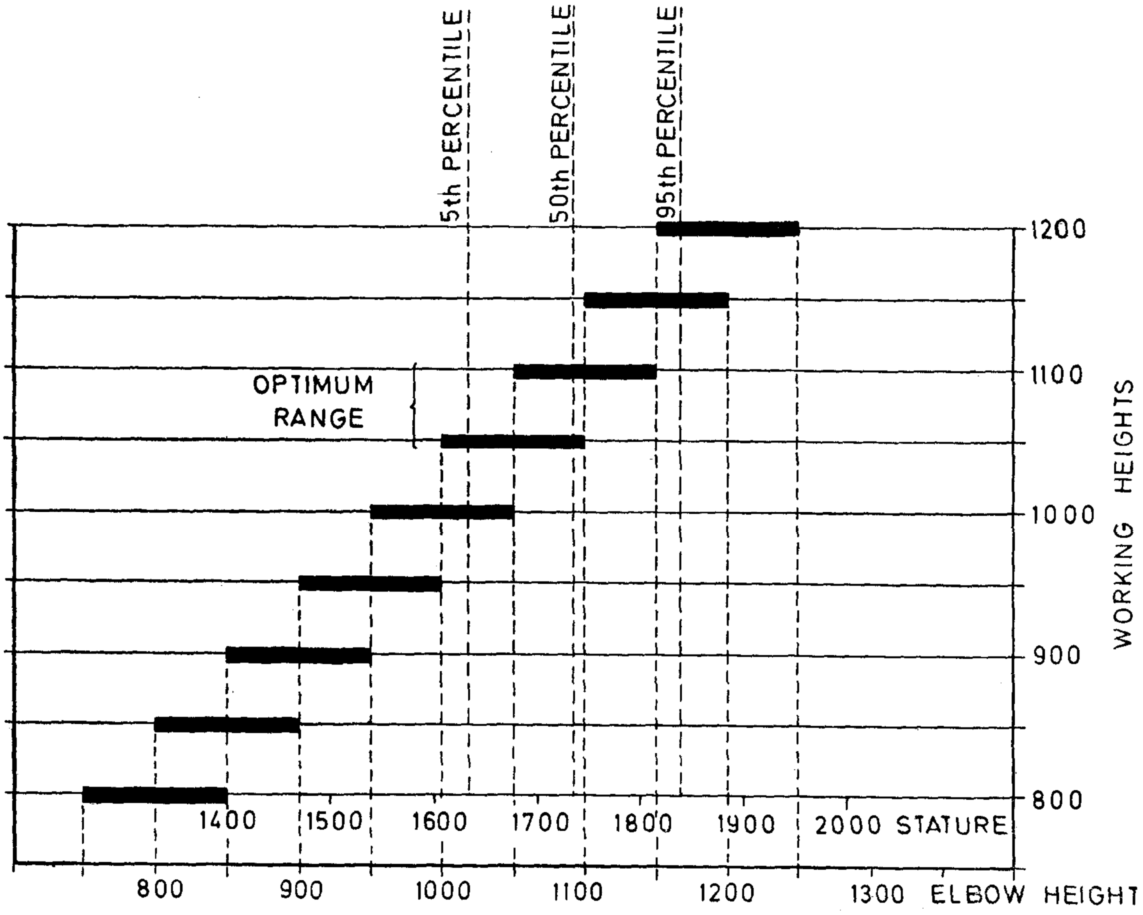
Component	Length	Width	Depth	Height	Remarks
Safes		n × 100 600	n × 100 600	n × 50 1 000	See Note 2
Seating, fixed (settees)	n × 100 1 600 1 800 1 900 2 000	n × 50 500 600 700		400 (seat) 900 (back)	See Note 2
Sideboard		n × 100 1 000 1 200 1 500 1 800	n × 100 500 600	n × 50 750 1 000	See Note 2
Storage cabinet		n × 100 500 600 800 1 000 1 200 1 500 1 800	n × 100 500 600	n × 50 750 1 000	See Note 2
Toe space	n × 100		50	100	See Note 2
Tray slides	n × 100	n × 50 250 300			Mounted position 750/800/850 height related to hand (knuckle) height. See Fig. 4 and 8
Vanitory unit		n × 100 8 00 1 000 1 200	n × 100 500 600	750 800	
Nardrobes		n × 100 from 400 600 900 1 200	n × 50 400 550 600	n × 50 1 800 1 900 2 000	See Note 2
Work benches and work tops	n × 100	n × 100 600 700 800 900		n × 50 700 750 800 850 900 950 1 000	700 and 750 height are intended for working from a seat. See Fig 7 See Note 2



	Male percentiles			Female Percentiles		
	5th	50th	95th	5th	50th	95th
Standing						
1 Stature	1 628	1 738	1 845	1 550	1 655	1 760
2 Eye level	1 525	1 632	1 742	1 455	1 560	1 665
3 Shoulder height	1 328	1 428	1 528	1 260	1 360	1 460
4 Elbow height	1 015	1 095	1 172	965	1 045	1 120
5 Hand (knuckle) height	705	770	838	660	735	815
6 Reach upwards	1 970	2 100	2 260	1 810	1 945	2 075
7 Reach forwards	772	848	922	635	705	775
Sitting						
8 Height above seat level	840	900	960	795	850	905
9 Eyes above seat level	725	785	844	695	750	800
10 Shoulder above seat level	535	585	635	500	555	605
11 Elbow above seat level	180	225	270	160	210	255
12 Top of knees above floor	505	550	600	475	525	575
13 Thigh clearance	125	150	175	125	150	175
14 Underside of thigh above floor	402	435	468	395	430	460
15 Rear of buttocks to back of calf	435	478	520	425	465	505
16 Abdomen to knees	335	385	435	325	375	420
17 Rear of buttocks to knees	568	615	660	530	575	620

All dimensions in millimetres.

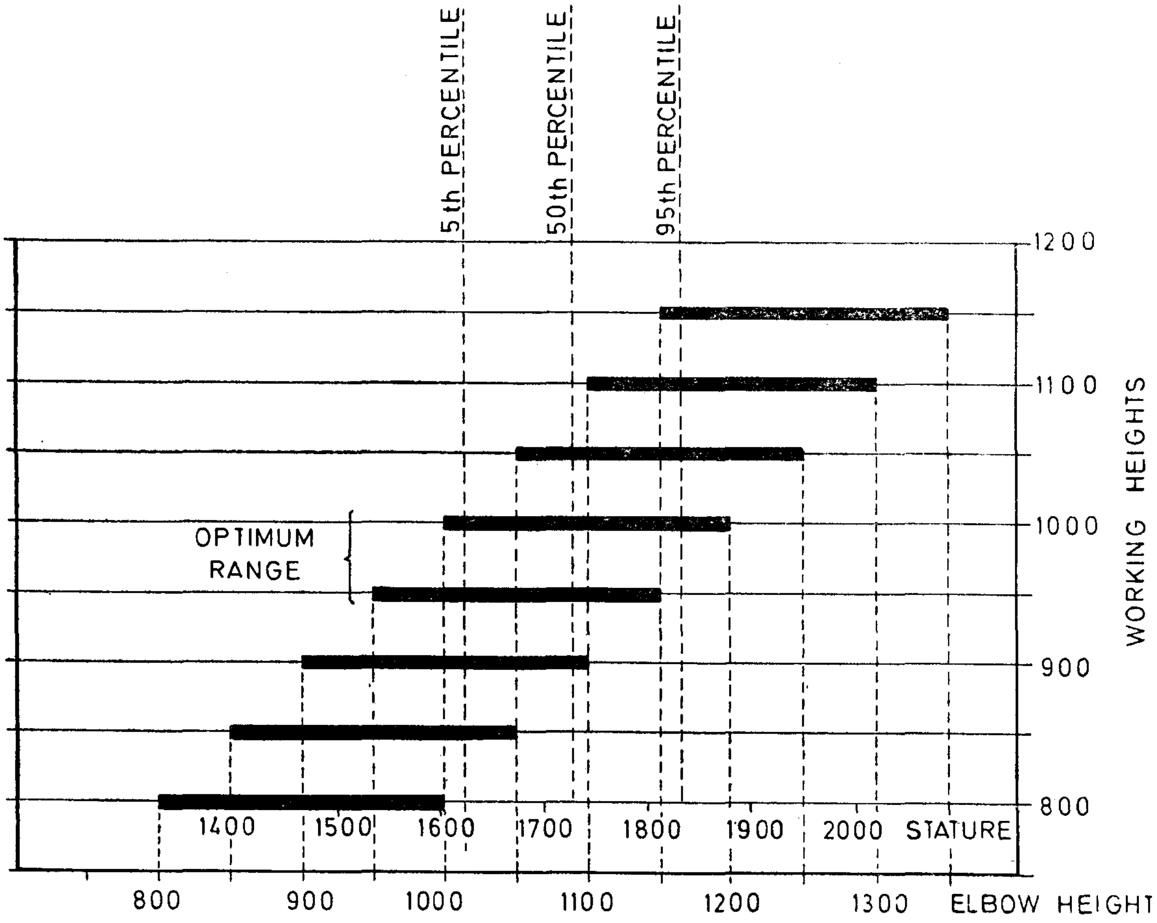
FIG. 4 ANTHROPOMETRIC DATA (BASED ON DATA FOR CAUCASIAN ADULTS & INCLUDING ALLOWANCE FOR CLOTHING)



Note — Bar counter heights are related to 50 mm above and below elbow heights. Height relates to bar surface or elbow rail where this is at a different height to the bar, see Fig. 8(a) Bar counter heights related to 300 mm above seat level when sitting, see Fig. 8(c).

All dimensions in millimetres.

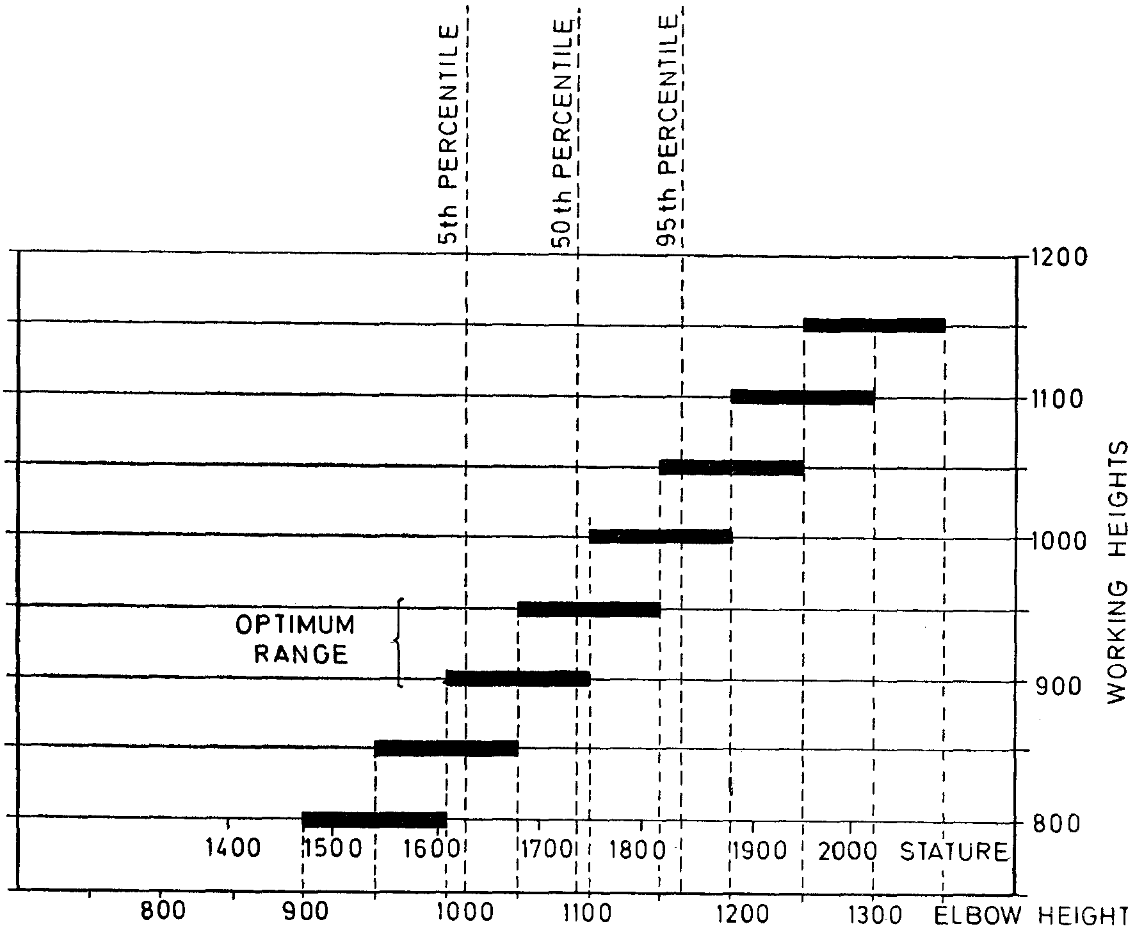
FIG. 5 WORKING HEIGHTS DERIVED FROM ANTHROPOMETRIC DATA : BAR COUNTERS



Note — Mess counters related to elbow height and 200 mm below for serving. Mess counters for dining related to between 250 mm and 280 mm above seat level. Tray slides related to hand (knuckle) height.

All dimensions in millimetres.

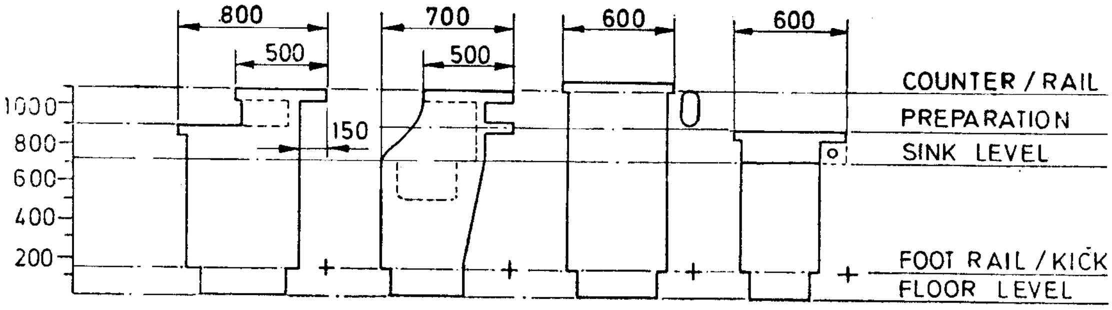
FIG. 6 WORKING HEIGHTS DERIVED FROM ANTHROPOMETRIC DATA : MESS COUNTERS



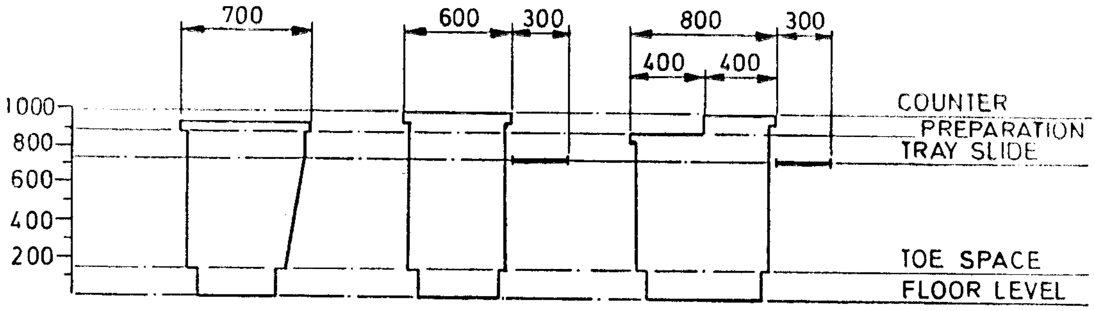
Note — Work benches and work tops related to 100 mm below elbow height to 200 mm below elbow height.

All dimensions in millimetres.

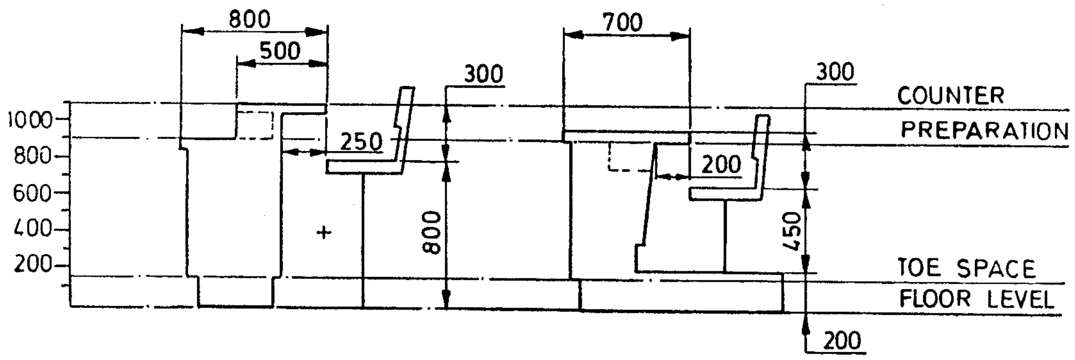
FIG. 7 WORKING HEIGHTS DERIVED FROM ANTHROPOMETRIC DATA : WORK BENCHES AND WORK TOPS



(a) BAR COUNTERS



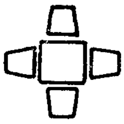
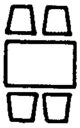
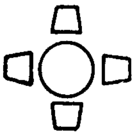
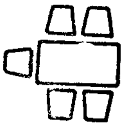
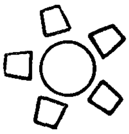
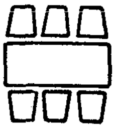
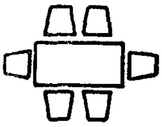
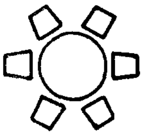
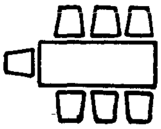
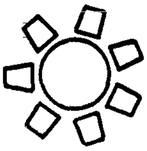
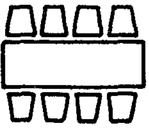
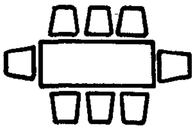
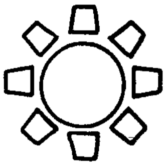
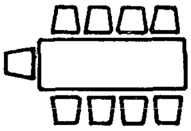
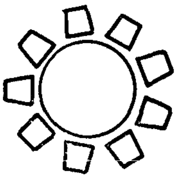
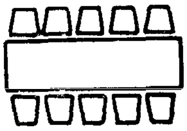
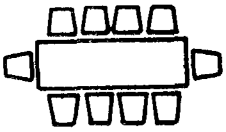
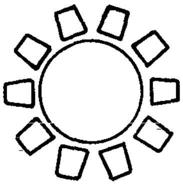
(b) MESS COUNTERS



(c) BAR/MESS COUNTERS WITH SEATS

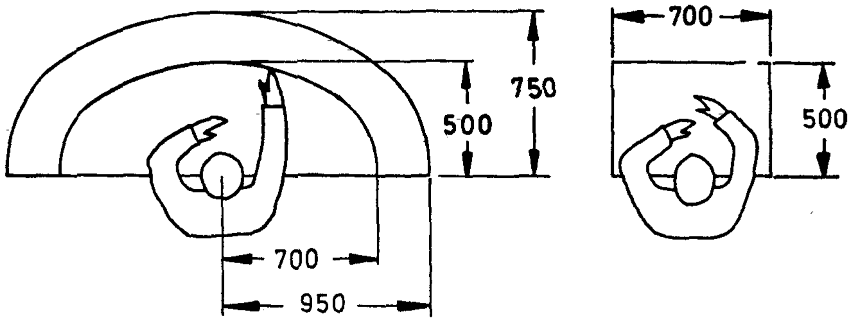
All dimensions in millimetres.

FIG. 8 TYPICAL BAR AND MESS COUNTER PROFILES

No. of Seats	Arrangement	Table Size
4		700 × 700 800 × 800
		1 200 × 800
		900 DIA
5		1 400 × 800 1 200 × 900
		1 000 DIA
6		1 800 × 800
		1 500 × 800 1 400 × 900
		1 200 DIA
7		2 000 × 800 1 800 × 900
		1 350 DIA
8		2 400 × 800
		2 100 × 800 2 000 × 900
		1 500 DIA
9		2 600 × 800 2 400 × 900
		1 700 DIA
10		3 000 × 800
		2 600 × 800 2 600 × 900
		1 900 DIA

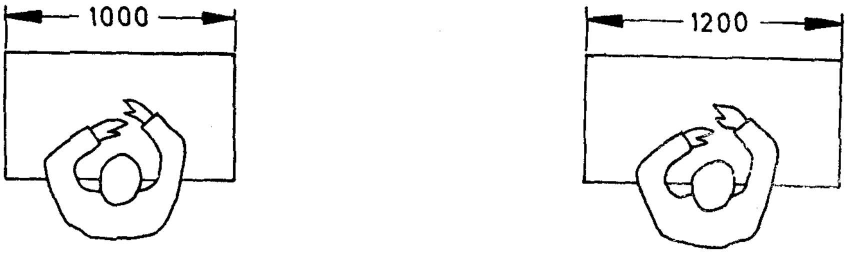
All dimensions in millimetres.

FIG. 9 MESS/DINING TABLE ARRANGEMENTS



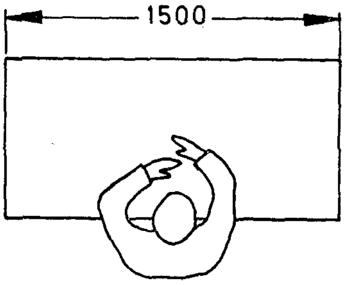
(a) AVERAGE REACH WHEN SITTING AT DESK; OUTER AREA REQUIRES BENDING

(b) BASIC SPACE FOR WRITING



(c) WITH ADDITIONAL SPACE FOR REFERENCE/PAPER

(d) WITH SPACE FOR REFERENCE/ PAPER ON BOTH SIDES



(e) REFERENCE/PAPER SPACE PLUS PENS/TELEPHONE

All dimensions in millimetres.

FIG. 10 ERGONOMIC CONSIDERATIONS FOR WRITING AND OFFICE DESKS

EXPLANATORY NOTE

This standard is one of a series of Indian Standards on dimensional coordination in shipbuilding. Other Standards in the series are:

IS : 8712 Guidelines for coordination of dimensions in shipbuilding:
- Part 1 Principles of dimensional coordination
- Part 2 Glossary of terms
- Part 3 Coordinating sizes for components and assemblies
- Part 4 Controlling dimensions
- Part 5 Coordinating spaces for internal subdivision
- Part 7 Coordinating sizes for fixtures, fittings and equipment
- Part 8 Coordinating sizes for services

In the preparation of this standard, considerable assistance has been drawn from BS MA 72-1976 "The coordination of dimensions in shipbuilding: coordinating spaces for furniture", issued by British Standards Institution.

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